

Remarks:

Applicant thanks Examiner Graybill for his careful examination of this application and his clear explanation of the claim rejections. In response to the Office Action of February 3, 2006, applicant amends this application as follows:

- Claim 10 is amended to add the step of applying a second insulating layer thinner than the carrier tape to the second surface of said patterned metal layer and uncovering a portion of the second surface of said patterned metal layer.
- Claims 12, 14, and 17 are amended to properly depend from claim 10.
- Claim 11 is canceled from this examination.
- New claims 18 and 19 are inserted.

With these amendments, applicant respectfully submits that the pending claims distinguish over the cited reference and stand patentable over it for the following reason:

Claim 10

Claim 10 along with its dependent claims 12, 14, and 16 stand rejected under 35 U.S.C. 102(b) as being clearly anticipated by Fukutomi (20020094606). Applicant amends claim 10 to overcome the rejection.

As amended, claim 10 has the additional limitation of a step, with which a second insulating layer is applied to the second surface of the patterned metal layer. This second insulating layer covers a portion of the patterned metal layer surface and uncovers a portion of the surface. In addition, this second insulating layer is thinner than the carrier tape. The added step is fully disclosed in the original specification:

In an additional process step, the method applies a second insulating layer, preferably less than 30 μm thick, to the second surface of the patterned metal layer, whereby this second insulating layer covers a portion of the second

surface of the patterned metal layer and leaves the second surface of the patterned metal layer exposed in windows in the second insulating layer.¹

* * *

The substrate has a sheet-like plastic carrier 111 in the thickness range 30 to 80 μm .²

The "seventeenth embodiment" in the Fukutomi publication cited in the Office Action does not disclose this limitation. The element cited in the Office Action as anticipating the carrier tape is element 51, which, according to Fukutomi, is "a supporting member."³ This supporting member is described as follows:

[0168] Plural sets of predetermined wiring patterns 52 are formed on a supporting member 51 (FIG. 19a). As the supporting member, an insulating base material such as a polyimide film can be used besides a metal foil such as an electrolytic copper foil. When an insulating base material is used, there are two methods. According to the first method, nonthrough-holes reaching the wiring patterns are formed at predetermined positions of the insulating base material, and external connection terminals are formed at exposed portions of the wiring patterns. The nonthrough-holes can be formed by applying an excimer laser or a CO₂ laser and so on. According to the second method, a drilled insulating base material provided with an adhesive is formed in advance and, subsequent to lamination with an electrolytic copper foil or the like, the copper foil is subjected to etching.⁴

The Office Action considers element member 51 to be both the first insulating layer and the second insulating layer.⁵ As stated clearly in the above paragraph, Fukutomi does not disclose removing the first insulating layer and applying a second layer – it either forms the nonthrough-holes to reach the wiring patterns or the nonthrough-holes are formed in advance before the layer is applied to the wiring patterns. Therefore, it is not possible for Fukutomi to anticipate process where a

¹ This application, p. 3, l. 30 – p. 4, l. 5.

² Ibid, p. 7, ll. 7-8.

³ US 2002/0094606 A1, ¶[0068].

⁴ Ibid, ¶[0168].

⁵ See Office Action, P. 2, last paragraph bridging P. 3, Feb. 2, 2006.

second insulating layer is applied and the layer is thinner than a carrier tape, as described in claim 10.

Because the Fukutomi publication does not disclose a method of applying two insulating layers where the second layer is thinner than the first layer, it does not anticipate claim 10.

Claim 10 also stands rejected under 35 U.S.C. 103(a) as being unpatentable over Fukutomi (20020094606).

The Office Action agrees that Fukutomi does disclose a carrier "tape" but deems it obvious to persons of ordinary skill in the art to select a polyimide carrier film as an alternative to the carrier tape.

Applicant respectfully submits that since the seventeenth embodiment of the Fukutomi publication does not disclose removing a carrier tape from a metal surface and then applying an insulating layer on the metal surface and that the insulating layer is thinner than the carrier tape, it does not render claim 10 obvious. Therefore claim 10 stands patentable over the Fukutomi publication.

Claims 12 and 14-17

Claims 12 and 14-17 depend properly from claim 10. Because claim 10 is not anticipated or rendered obvious, claims 12 and 14-17 stand patentable at least by virtue of their dependence.

Claims 18 and 19

Newly inserted claim 18 describes a method for packaging an integrated circuit chip. Among the steps, claim 18 includes a step of removing a carrier tape from the metal layer to uncover the entire first side of the metal layer and then applying to that side of the metal layer an insulating layer, which uncovers a portion of the first side. The new claim 19 further describes the insulating layer as being thinner than the carrier

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tape. Both new claims are fully supported in the original specification and the original drawings and they distinguish from the cited references.

Applicant respectfully submits that this application is in allowable form. And because the seventeenth embodiment of the Fukutomi publication does not disclose a second insulating layer on a package and the second layer being thinner than a carrier tape, claim 10, as amended, is not anticipated nor rendered obvious and stands patentable. Claims 12, 14-17 properly depend from claim 10 and they also stand patentable. The newly inserted claims 18 and 19 are fully supported in the original specification and distinguish from the reference and also stand patentable. Applicant respectfully requests further examination of this application and timely allowance of all pending claims.

Respectfully submitted,
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